CHAPTER 4 ENERGY FOR GROUND TRANSPORTATION

4.1 Ground Transportation in Hawaii

This chapter examines energy use by ground transportation in Hawaii, factors that influence demand, and alternative transportation fuels. Energy demand in the transportation sector is based upon the number and types of vehicles in use, and how many miles these vehicles travel. The increased use of pickup trucks and sport utility vehicles in place of passenger vehicles and increased travel distances as residential development and job growth occur in different areas have caused increased ground transportation fuel use in Hawaii and nationally.

In 1997 there were 884,267 motor vehicles registered in Hawaii (Table 4.1). This number was 1.4% below the statewide 1991 peak of 897,193 vehicles. Table A.12, in Appendix A, depicts the numbers of registered motor vehicles by county, from 1990 to 1997. Most of these vehicles were classed as passenger vehicles, a category that includes vans, pickups, and other trucks weighing less than 6,500 pounds and in personal use.

Table 4.1 Motor Vehicle Registrations by Type and by County, 1997

Type of Vehicle	City and County of Honolulu	County of Hawaii	County of Kauai	County of Maui	State Total
Passenger	484,761	90,281	39,078	90,573	704,693
Ambulances	30	14	-	10	54
Buses	2,633	240	25	328	3,226
Trucks	95,102	25,393	14,027	23,935	158,457
Truck Tractors	201	103	42	111	457
Truck Cranes	112	16	13	79	220
Motorcycles, Motorscooters	12,282	2,317	719	1,842	17,160
Total	595,121	118,364	53,904	116,878	884,267

DBEDT 1998e, Table 18.08

4.2 Ground Transportation Fuel Demand

4.2.1 Current Ground Transportation Fuel Use

Although the number of registered vehicles in Hawaii declined during the period 1990–1997, and the estimated vehicle miles traveled declined slightly, highway fuel use (which included gasoline, diesel, and LPG) increased. Gasoline use increased 6.7%, and diesel use increased 21.6%, but LPG highway use declined 61%. Table A.13 shows estimated Hawaii ground transportation activity and energy use between 1990 and 1997.

Hawaii's estimated average highway vehicle fuel efficiency declined from 20 mpg in 1990 to 18.4 mpg in 1997, a 7.8% decline. This was despite the increased federal Corporate Average Fuel Efficiency (CAFE) standards for newer vehicles, whose number grew in relation to the total fleet of registered vehicles each year. New vehicles registered in Hawaii were, on average, less efficient than the CAFE

standard. Table 4.2 compares vehicle miles traveled (VMT), highway fuel use, and estimated average vehicle efficiency by County. Trends are shown in Figure 4.1. In Figure 4.1, registered vehicles, estimated VMT, highway fuel use, and de facto population[a] are all indexed to their 1990 values (1990 = 1.0 as the base year).

Table 4.2 Vehicle Miles Traveled, Fuel Use, and Average Fuel Efficiency by County, 1997

	City and County of Honolulu	County of Hawaii	County of Kauai	County of Maui	State Total
Vehicle Miles Traveled					
Miles (000)	5,225,200	1,161,500	570,300	1,046,000	8,003,000
Highway Fuel Used (000 Gallons)					
Gasoline	262,768	61,441	23,364	52,863	400,436
Diesel	19,229	5,718	1,419	3,743	30,109
LPG	277	16	13	21	327
Highway Fuel Use (Gasoline-Equivalent)					
Gallons (000)	284,302	67,794	24,947	57,030	434,073
Estimated Average Vehicle Fuel Efficiency					
Miles per Gallon	18.4	17.1	22.9	18.3	18.4

DBEDT 1998, Tables 17.18 and 18.18

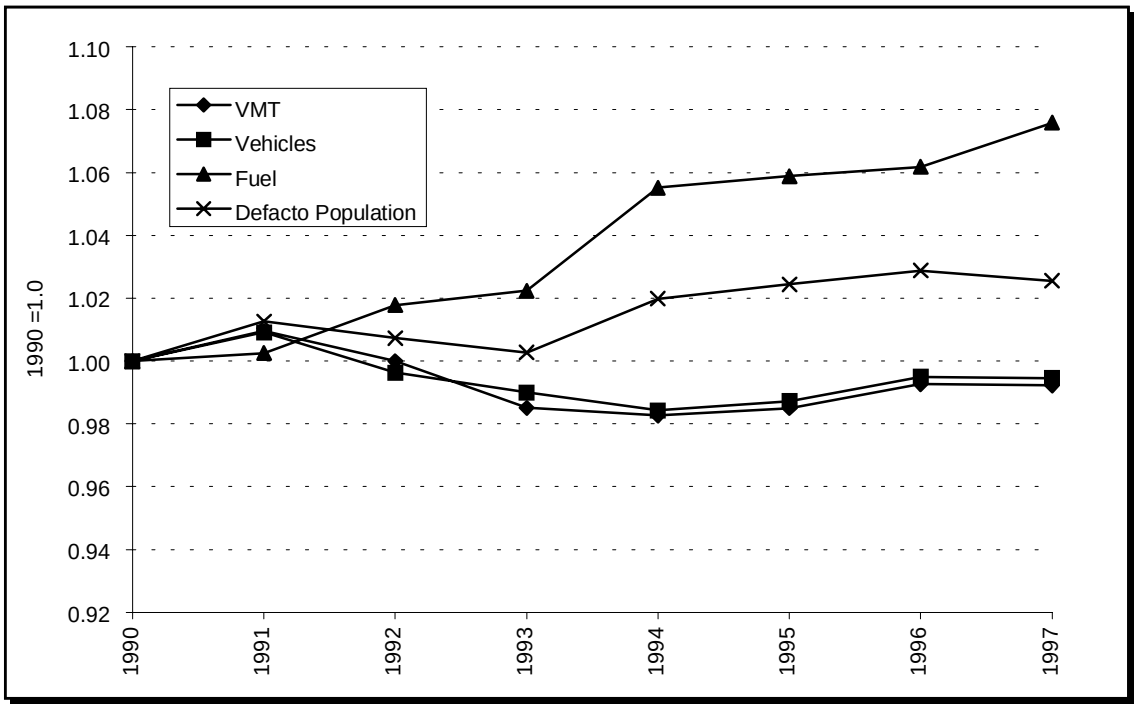

Figure 4.1 Hawaii Registered Vehicles, Estimated VMT, and Fuel Use Compared with De Facto Population, 1990–1997

There was a decline in the number of vehicles between 1990 and 1997, and the trend in estimated VMT was similarly downward, but within a narrow range. Fuel

[a] Resident population plus average number of visitors

use for all three fuels grew 7.6% in total Btu value, a greater increase than the nominal 2.6% growth in the de facto population.

4.2.2 Future Ground Transportation Fuel Demand

The ENERGY 2020 model was used to estimate Hawaii's future demand for transportation fuels from the year 2000 to 2020. As shown on Figure 4.2, highway gasoline use is estimated to grow from 54.9 TBtu in 2000 to 72.7 TBtu in 2020, a 32% increase. Over the same period, highway diesel use is estimated to decline by 4%, from 1.09 TBtu in 2000 to 1.04 TBtu in 2020.

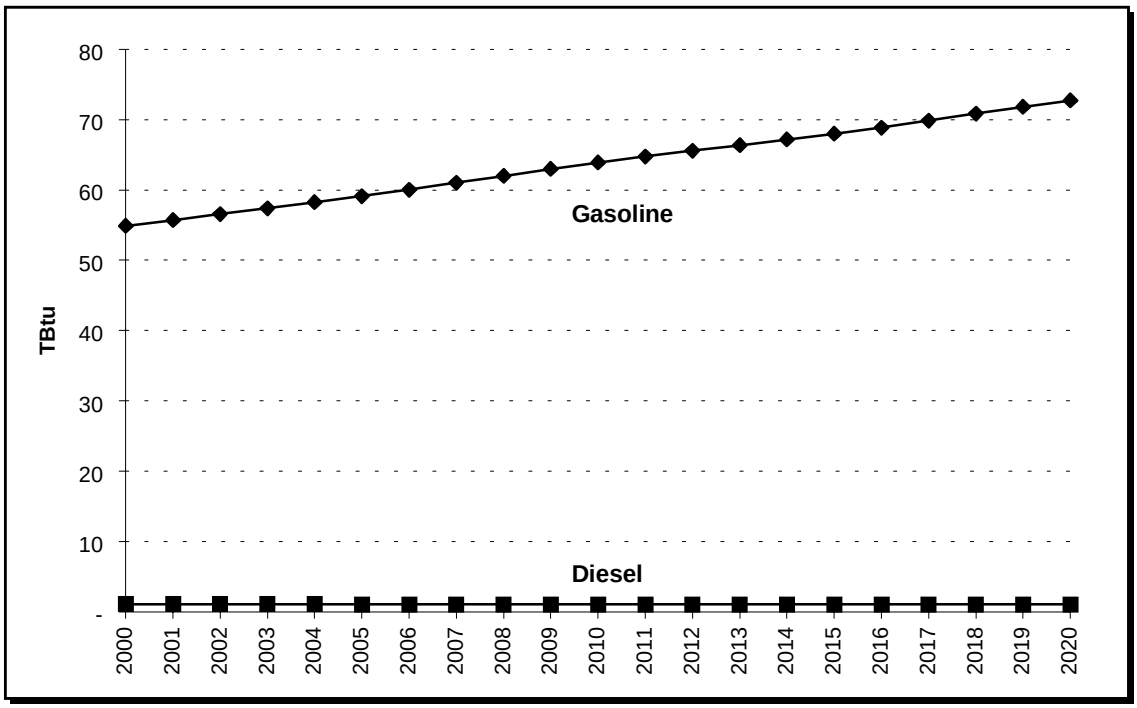

Figure 4.2 Estimated Highway Gasoline and Diesel Use in Hawaii, 2000–2020

4.3 Greenhouse Gas Emissions from Ground Transportation Fuel Use

Figure 4.3 shows historical and estimated CO_2 emissions from ground transportation fuel use from 1990 to 2020. Unless there is greater efficiency in the ground transportation sector, increased use of alternative transportation fuels, or both, CO_2 emissions from this sector in the year 2010 will be 16% greater than they were in 1990 and 20% greater than the Kyoto target. The comparison with the Kyoto target is made for reference only. It is not expected that any sector or any state will be required to meet the Kyoto standard independently of overall national efforts, should the United States ratify the treaty.

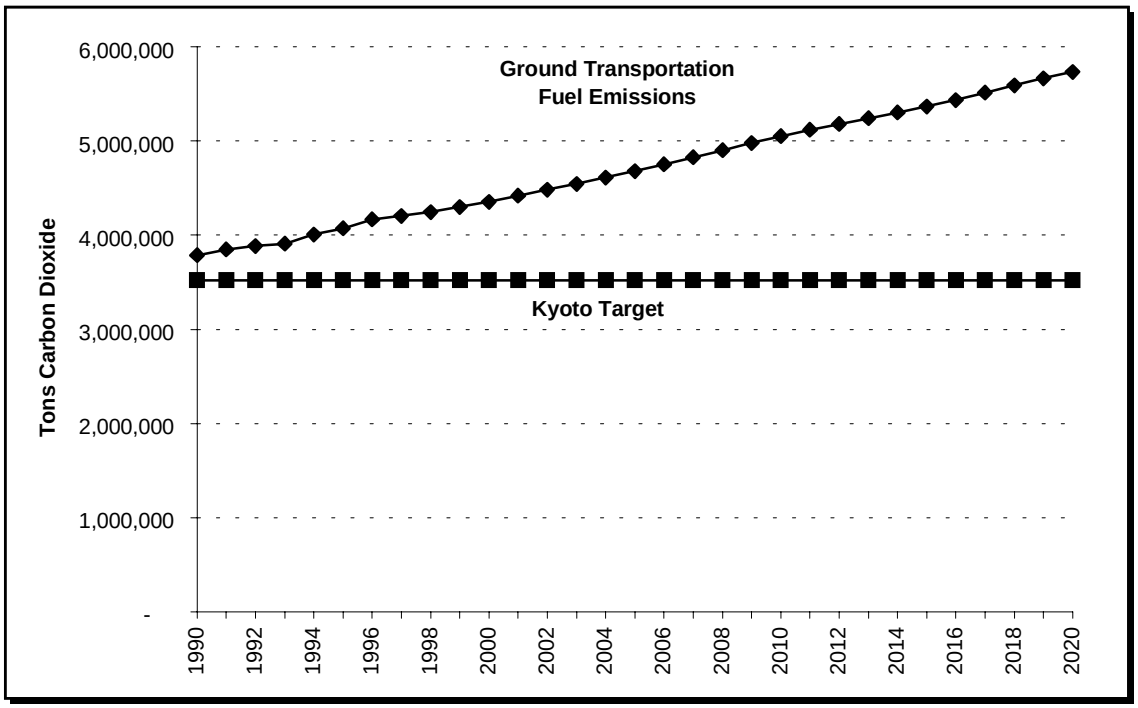

Figure 4.3 Estimated CO_2 Emissions from Ground Transportation Fuel Use in Hawaii, 1990–2020

4.4 Economic Effects of Ground Transportation Fuel Use

Based upon the Bureau of Labor Statistics Honolulu Consumer Price Index, the average Honolulu resident expended 3.02% of his or her total expenditures on motor fuel (DBEDT 1998e, 388–389). The U.S. Energy Information Administration (EIA) estimated this to be about $679 million in 1995 (EIA 1998, 91). A significant portion of this money left the state. If locally produced alcohol fuels or electricity for electric vehicles produced from renewable resources had been available to supply a portion of that demand, expenditures for the locally produced fuels might have contributed more to the growth of the State's economy.

4.5 Reducing Ground Transportation Energy Demand

The following sections offer recommendations as to how ground transportation energy demand can be reduced, with potential benefits to Hawaii's environment, economy, and people.

4.5.1 Improving the Fuel Efficiency of the Hawaii Vehicle Fleet

One means of decreasing energy demand and greenhouse gas emissions in the ground transportation sector would be to increase the average fuel efficiency of vehicles operating in Hawaii. The following recommendations are intended to improve fuel efficiency.

4.5.1.1 RECOMMENDATION: Consider Increasing the Visibility of Driving Costs

Suggested Lead Organization: Legislature, DBEDT and DOH

The federal law setting CAFE standards (Title V of the Motor Vehicle Information and Cost Savings Act, 15 U.S.C. 2001-2013) preempts states from setting their own fuel efficiency standards. However, states can encourage the purchase of more fuel-efficient vehicles indirectly by increasing the proportion of driving costs paid through assessments on fuels. For example, highway maintenance is now partially financed through state fuel taxes. Traffic law enforcement and liability insurance could also be financed through pay-at-the-pump systems. Such actions would internalize the costs of driving in the gasoline price. These matters are policy decisions within the purview of the Legislature and are recommended for consideration. The apparent fuel cost would be increased (while actual driving costs to many motorists might be reduced), which would make drivers more aware of their own fuel use. This may encourage some drivers to give greater consideration to fuel economy in the purchase of vehicles.

4.5.1.2 RECOMMENDATION: Increase Information on the Environmental Costs of Vehicle Fuel Use through a New Environmental Impact Information Sheet

Suggested Lead Organizations: Legislature, DBEDT and DOH

If the CAFE standards were effective, Hawaii's vehicle fleet would be more efficient than it was in 1990. Newer vehicles, overall, should have greater average fuel economy, and this should be reflected in lower fuel use per registered vehicle.

The Current Vehicle Fleet Does Not Meet CAFE Standards. Table 4.3, depicts the 20 best-selling automobiles and light trucks in Hawaii in 1998. These models accounted for 1/3 of the 93,110 vehicles sold in that year, and of these, pickup trucks or minivans made up 28.5% (PBN 1999). As a result, overall fuel economy of the national vehicle fleet did not improve. Since increased fuel use per vehicle in Hawaii was also suggested by available data, it appears that Hawaii vehicle sales may be following the national trend to less fuel-efficient vehicles.

The CAFE standard was 27.5 mpg for automobiles and 20.7 mpg for trucks. The over 40,000 automobiles purchased in Hawaii in 1998 averaged 27.3 mpg, or 99.4% of the CAFE standard. The 27,700 light trucks, vans, and sport utility vehicles sold averaged 19.4 mpg, or 93.8% of the CAFE standard. Together, the 1998 sales-weighted average fuel economy of all new vehicles sold in Hawaii was 25 mpg, or 98.2% of the sales weighted CAFE standard of 25.5. Thus, in 1998, Hawaii vehicle buyers chose vehicles that, all together, were less efficient than the CAFE standard, despite high gasoline prices. A flattening in reported fuel use suggests that recent purchases may have generally been more efficient overall than in previous years.

Table 4.3 Fuel Economy and CO_2 Emissions of Top 20 Vehicles in Sales in Hawaii, 1998

Make and Model	Total Sold	Average MPG	Tons CO2 per 10,000 mi.	Gallons per 10,000 mi.
Dodge/Plymouth Neon[a]	**3,235**	**31.8**	**3.1**	**315**
Toyota Camry	2,196	25.3	3.8	396
Toyota Corolla	**2,160**	**33.1**	**2.9**	**302**
Nissan Altima	1,893	26.0	3.7	385
Honda Civic	**1,817**	**38.4**	**2.5**	**261**
Ford Escort	**1,711**	**30.8**	**3.2**	**325**
Honda Accord	1,665	26.8	3.6	374
Ford RANGER[b]	**1,556**	**23.5**	**4.1**	**426**
Ford Mustang	1,473	22.5	4.3	445
Dodge CARAVAN	**1,446**	**21.7**	**4.5**	**461**
Chevrolet Cavalier	1,355	26.7	3.6	374
Ford WINDSTAR	1,327	19.9	4.9	502
Ford EXPLORER	1,213	18.2	5.3	550
Dodge Stratus	**1,146**	**29.8**	**3.3**	**336**
Chevrolet Malibu	1,096	25.5	3.8	392
Jeep GRAND CHEROKEE	1,093	18.9	5.1	528
Pontiac Grand Am	1,052	25.7	3.8	389
Jeep WRANGLER	1,043	18.7	5.2	535
Toyota 4RUNNER	**1,021**	**21.2**	**4.6**	**472**
Ford Taurus	1,017	21.4	4.5	466

Source: The Polk Company via *Pacific Business News*, 1999

[a] Fuel economy of models in boldface was better than the CAFE standard in their category.
[b] Models in all caps are light trucks, vans, and sport utility vehicles.

In aggregate, the 20 top-selling vehicles averaged 24.1 mpg. The Table also shows the estimated CO_2 emissions per vehicle, based upon driving 10,000 miles per year. Such information could be made available to vehicle shoppers for consideration in making purchase decisions.

The Current Fuel Economy Label. Vehicle shoppers may not consider relative fuel efficiency between vehicle options beyond the cost of the fuel, which is now relatively low. The Fuel Economy Label includes estimates of gasoline mileage, an estimated range of fuel economy that most drivers achieve with the particular model, estimated annual fuel cost, and the range of fuel economy for other models of the same vehicle size class (USDOE 1996, 12).

The Proposed Environmental Impact Information Sheet (EIIS). Vehicle buyers could be provided additional information regarding the greenhouse gas emissions of each type of vehicle. The EIIS would include the current information supplemented with information on the vehicle's estimated contribution to global warming per mile and for a typical year's operation. These values would be compared on the EIIS with the current CAFE standard. This additional information would enable consumers to choose vehicles that would improve the fuel efficiency of the U.S. and Hawaii vehicle fleets and reduce their personal contribution to greenhouse gas emissions.

4.5.1.3 RECOMMENDATION: Encourage Purchase and Use of Fuel-Efficient Conventional Vehicles and Hybrid Vehicles

Suggested Lead Organization: Vehicle Dealers

Two manufacturers intend to begin selling hybrid vehicles capable of 60 to 80 mpg in the near future. These hybrid vehicles use a small gasoline e***n***gine to charge batteries for an electric motor that drives the vehicle. The use of hybrid and high-efficiency gasoline vehicles by Hawaii motorists will help reduce ground greenhouse gas emissions from transportation fuel use.

4.5.2 Reducing Fuel Use

The following recommendations are intended to reduce fuel use, decreasing Hawaii's dependence on imported oil and its negative effects on Hawaii's environment.

4.5.2.1 RECOMMENDATION to Reduce Fuel Use: Continue Efforts to Increase Use of Mass Transit

Suggested Lead Organization: City and County of Honolulu and other Counties

Oahu's mass transit system consists of a fleet of 525 buses, which carried over 74.4 million passengers in 1997 (DBEDT 1998e). As part of the City and County's *Oahu Trans 2K* planning, now ongoing and soliciting public input, the City proposes a high-capacity electric trolley system throughout the primary urban center with easy access parking facilities served by the trolleys at all peripheral entrance points to downtown. Expanded fleets of express buses to bring residents from Central Oahu and other outlying districts to downtown on dedicated bus lanes would interface with the trolley system (C&C 1998b).

In addition, based upon the earlier Oahu Regional Transportation Plan (Kaku Associates 1995), the City is enlarging the bus fleet to about 715 vehicles. Buses will be supplemented by 125 Handi-Vans (Table A-3b). The bus and trolley system would be also supplemented by planned additional vanpools and water taxis and ferries under the *Oahu Trans 2K Plan*.

4.5.2.2 RECOMMENDATION: Improve the Bicycle Transportation System

Suggested Lead Organizations: State Department of Transportation and the Counties

There has been considerable interest in increased use of bicycles in the counties and at the State level. Bicycles do not use fossil fuels and do not produce greenhouse gas emissions. The bicycle racks recently added to City buses in Honolulu are frequently used, indicating that the combination of individual mobility and mass transit is effective. However, statewide there are few bicycle lanes, making bicycling difficult and – and in many cases dangerous. The state and

counties have developed plans for increasing the number and safety of bicycle lanes and paths. Action should be taken to improve the bicycle transportation system. (See DOT 1994, C&C 1998a, Kaku Associates 1997, and F. Harris 1998)

4.5.2.3 RECOMMENDATION: Use Land Use Planning to Reduce Congestion and Need for Transportation

Suggested Lead Organizations: State Land Use Commission, Office of Planning, Department of Land and Natural Resources, Department of Transportation, and the Counties

Mixed-use development plans, in which residential and commercial land uses are allowed in the same neighborhood, can reduce the need for commuting from residential districts to commercial districts. The State of Hawaii and the City and County of Honolulu appear to be moving in directions supportive of this recommendation as outlined in Mayor Harris' *21st Century Oahu – A Shared Vision for the Future, Oahu Vision Presentation* (Mayor Harris 1998). By reducing congestion and the need for transportation, less vehicle fuel will be used and less greenhouse gas emission will occur.

4.5.2.4 RECOMMENDATION: Reduce Congestion Through the Use of Transportation Control Measures

Suggested Lead Organizations: Department of Transportation, Oahu Metropolitan Planning Organization, and Counties

Transportation Control Measures. Transportation control measures (TCMs) improve the efficiency of the transportation system and reduce transportation demand. Those measures that emphasize improving the operating efficiency and maximizing the capacity of the existing transportation system often address localized concerns and may help reduce congestion. These measures focus on the "supply side" of transportation service (PBQD 1995, 3-1).

In theory, improved transportation efficiency should result in reduced fuel use; however, when congestion is reduced and the system performs better, additional trips are typically generated. In addition, the energy efficiency of internal combustion engine vehicles varies in a nonlinear fashion with vehicle speed. At a speed specific to each vehicle, but often around 25–35 mph for a passenger car, maximum fuel efficiency is attained. Therefore, if transportation system management measures result in a change in average speeds, average fuel efficiency could increase or decrease (3-1 to 3-2).

In *HES 1995*'s Project 5,*Transportation Energy Strategy*, it was estimated that 10% of the fuel making up the ground-sector transportation energy demand on Oahu was wasted due to congestion (3-2). In 1997, that would have resulted in about 390,000 tons of CO_2 emissions as idling vehicles burned gasoline and diesel fuel.

Where the transportation control measures reduce the demand for transportation, they can help reduce greenhouse gas emissions because fuels are not used to move people or things – or people or things do not need to be moved as far. Demand-side transportation control measures include land-use planning, telecommuting, and schedule changes (e.g., going from a five-day workweek to a four-day workweek).

Transportation Control Measures in Hawaii. The *2020 Oahu Regional Transportation Plan* considered a wide range of TCMs and adopted many of them. (For a more detailed discussion of possible TCMs, please see *the HES 1995*, Project 5, *Transportation Energy Strategy* [PBQD 1995]). The measures planned for implementation through 2000 were as follows:

- High Occupancy Vehicle (HOV) facilities and enforcement;
- Park-and-Ride lots;
- Rideshare programs;
- Increased telecommuting, encouragement of flexible work hours, and compressed work weeks;
- Public transit support such as transit pass subsidies and public transit marketing;
- Mandating preparation and implementation of trip reduction plans by developers and employers;
- Bicycle facilities; and
- Improved pedestrian facilities (Kaku Assoc. 1995, Table A-1c).
- Parking management measures that would reduce the attractiveness of commuting by automobile by making parking less available and more costly (Table A-2c, 3c).

4.5.2.5 RECOMMENDATION: Develop Estimates of the Energy- and Emission-Saving Effectiveness of TCMs

Suggested Lead Organizations: Department of Transportation, Oahu Metropolitan Planning Organization, and the Counties

TCMs are designed to affect travel performance. Energy saving could be a by-product but is not usually a primary goal. It is quite difficult to determine the energy effectiveness of the many TCMs included above. Those measures that show the greatest energy-saving potential in the short- and mid-term operate by reducing total regional VMT through travel mode shifts away from single occupant vehicles, or by decreasing the need for travel. The potential energy savings associated with certain combinations of TCMs may be as much 18% less than previously estimated for by 2020 (PBQD 1995, 3-50). Additional efforts to analyze and model TCMs are recommended.

4.6 Alternative Fuels for Ground Transportation

Alternative transportation fuels could reduce demand for gasoline and diesel fuel in the ground transportation sector. This could provide a certain amount of diversification of fuel demand as well as create a market for locally produced fuels and fuel feedstocks. These alternative fuels and relevant laws, incentives, and programs are discussed in this section.

4.6.1 Alternative Fuels

Alternative ground transportation fuels include alcohol fuels (methanol and ethanol), propane, natural gas, electricity, biodiesel, and hydrogen. Table 4.4 introduces the alternative fuels.

4.6.2 Encouraging Production and Use of Alternative Fuels in Hawaii

4.6.2.1 RECOMMENDATION: Publicize Incentives for Ownership of Alternative Fuel Vehicles (AFVs)

Suggested Lead Organization: DBEDT and the Counties

Hawaii laws offer incentives to own and operate AFVs:

- The state fuel tax on propane is 11¢ per gallon (compared to 16¢ per gallon for diesel);
- Electric vehicles (identified by special license plates) may park free at parking meters and use HOV lanes at any time;
- The cost of equipment to dispense "clean fuel" is tax deductible; and
- AFVs are exempt from vehicle registration fees until 2000.

4.6.2.2 RECOMMENDATION: Encourage Production and Sale of 10% Ethanol Blend Gasoline in Hawaii

Suggested Lead Organizations: DBEDT through formal rule making and Department of Agriculture

Alcohol fuels are not currently available in Hawaii, but there has been a great deal of discussion over the years about producing alcohol fuels in Hawaii. Cost estimates for an aggressive alcohol fuels program were made as part of the *Hawaii Energy Strategy's Project 5, Transportation Energy Strategy* (PBQD 1995). Legislation enacted in 1994 stated that "gasoline in Hawaii shall contain ten percent ethanol by volume" with details to be addressed through a formal rule making process under the direction of the Department of Business, Economic,

Table 4.4 Alternative Ground Transportation Fuels

Fuel	Description
Biodiesel	 A substitute for diesel fuel. Limited quantities are made from vegetable oil (including used cooking oil) in Hawaii. Can also be made from microalgae, rapeseed, and other plants. Used in boats, buses, and large trucks.
Electricity (for "electric vehicles")	 An electric vehicle has an electric motor instead of an internal combustion engine. Electricity for the motor comes from batteries or fuel cells. Since there's no combustion happening on the vehicle, electric vehicles are "zero emission," quiet, and cool. Electricity is made in Hawaii and can be produced from renewable resources.
Ethanol	 An alcohol fuel made from corn or sugar cane. Techniques are under development to make ethanol from waste paper, sawdust, and other low-cost materials. Ethanol is a liquid fuel that can be used in an internal combustion engine or a fuel cell. Ethanol could be made in Hawaii.
Fuel Cells (not commercially available in vehicles)	Fuel cells vehicles use various liquid or gaseous fuels in an electrochemical process to deliver electricity to an electric motor. Thus, they are a form of electric vehicle that could be re-fueled with alternative fuels (ethanol, methanol, or hydrogen, for example). This is attractive since re-fueling is faster than re-charging. The technology is still in the research and development stage.
Hydrogen (not commercially available as a vehicle fuel)	Hydrogen is being considered for use in fuel cells and has been used in internal combustion engines. The main obstacle is fuel distribution and storage, both on and off the vehicle. Vehicles are still in the research and development stage. Hydrogen fuel could be made in Hawaii.
Methanol	 An alcohol fuel made from natural gas. It could also be made from landfill gas, bagasse, or wood chips. Methanol is a liquid fuel that can be used in an internal combustion engine or a fuel cell. Methanol could be made in Hawaii.
Natural gas	Not commercially available in Hawaii. Synthetic natural gas is made from refinery byproducts on Oahu. It has a different composition from the natural gas used on the Mainland. Also, Hawaii's synthetic natural gas is only available in a limited area of Oahu (neighbor islands and other areas of Oahu use propane instead).
Propane (also known as "LPG", or liquefied petroleum gas)	 Propane, which is made on Oahu from refinery byproducts, is more practical than natural gas for Hawaii and is available statewide. Propane vehicles have been in use in Hawaii for many years. The fuel is made in Hawaii from imported petroleum.
Solar Cars	Although fun for racing, a typical solar car requires solar panels that would be too big to be practical (the car wouldn't fit in a normal lane or parking space). But a car doesn't have to carry solar cells with it – an electric car can plug into solar panels installed on a carport or garage roof, and charge up while parked in the shade.

Development, and Tourism" (Chapter 486-10j, HRS). The preliminary work is underway in preparation for the necessary formal rule making. One concern is the current lack of local ethanol fuel production, which is needed to keep economic advantages of ethanol use largely within the State. Various developers continue to evaluate the feasibility of projects.

4.6.2.3 RECOMMENDATION: Encourage Early Deployment of Electric Vehicles in Hawaii

Suggested Lead Organization: DBEDT, the Counties, Electric Utilities, and Hawaii Electric Vehicle Demonstration Program

Honolulu is becoming the first "electric vehicle-ready" city in the United States, as Hawaiian Electric Company installs a network of up to 20 electric Rapid-Charger stations where electric vehicles can be recharged in less than nine minutes. This will be an important element of infrastructure to support deployment of electric vehicles. Early deployment of electric vehicles will help reduce greenhouse gas emissions. In addition, nighttime charging of electric vehicles could help improve the efficiency of electric utility systems by increasing base load levels. Base load utility operations produce less greenhouse gas emissions per kWh generated than peak load and cycling operations. (HECO 1998).

Encourage Electric Vehicle Manufacturers to Offer Electric Vehicles for Sale. Hawaii offers an ideal place for electric vehicle use. The temperate climate reduces thermal management problems and the geographic limits of islands guarantee that no driver could ever stray beyond a network of charging stations. The charging station network will make operation anywhere on Oahu possible. Most commuters' round trips are within the range offered by current battery technology. Because Hawaii motorists do not need a car capable of interstate vacation trips, they may purchase electric vehicles as their primary vehicle. Hawaii also offers a marketing opportunity for rental car agencies and electric vehicle manufacturers. Rental agencies can offer a unique and exciting vehicle option while providing manufacturers the opportunity to show off their electric vehicles to new customers (HECO 1998).

Expand Hawaii Electric Vehicle Demonstration Project. The Hawaii Electric Vehicle Demonstration Project (HEVDP) is a consortium established initially through a federal grant from the United States Department of Defense, Advanced Research Projects Agency, to facilitate the development of electric vehicle technologies in the State, for both commercial and military applications. HEVDP has deployed nearly 40 electric vehicles on Hawaii's roads. These are operated primarily by the military, the State, and the electric utilities. Vehicles include pickup trucks, automobiles, buses, and a specialized industrial vehicle. In addition, E Noa Tours operates an electric "Waikiki Trolley" (Quinn 1998). HEVDP is also coordinating the Rapid Charger program.

4.6.2.4 RECOMMENDATION: Continue to Assist Fleets in Complying with EPACT Requirements for Alternative Fuel Vehicles

Suggested Lead Organization: DBEDT

In 1992, the National Energy Policy Act (EPACT) became law. This law required fleets of more than 20 centrally fueled light-duty vehicles located in metropolitan areas (in Hawaii, only Oahu is included) to purchase "alternative fueled vehicles." The percentages of new vehicles purchased each year that must be alternative fuel vehicles are as shown on Table 4.5.

Alternative fuels permitted by EPACT are alcohol fuels, natural gas, liquefied petroleum gas (also known as LPG or propane), hydrogen, biodiesel, coal derived fuels, fuels derived from biological materials, and electricity. EPACT also provides tax incentives for AFV purchases, conversions, and the installation of "clean fuel"

Table 4.5 EPACT Requirements for AFV Percentages in Fleets, 1997-2006

Model Year	Federal Gov't	State Gov't	Municipal Gov't & Private Fleets	Fuel Provider
1997	25%	10%		50%
1998	33%	15%		70%
1999	50%	25%		90%
2000	75%	50%		90%
2001	75%	75%		90%
2002	75%	75%	20%	90%
2003	75%	75%	40%	90%
2004	75%	75%	60%	90%
2005	75%	75%	70%	90%
2006	75%	75%	70%	90%

dispensing equipment (PL 102-486). An amendment allows 20% biodiesel and 80% diesel blends to be used to offset up to 50% of a fleet's light-duty vehicle purchase requirements (PL 105-388).

4.6.2.5 RECOMMENDATION: Support Honolulu Clean Cities Program

Suggested Lead Organizations: City and County of Honolulu, DBEDT, and other participants

Honolulu Clean Cities is part of the nation-wide Clean Cities program sponsored by the U.S. Department of Energy. The program promotes use of alternative transportation fuels. The twenty-seven organizations participating in the Honolulu Clean Cities Program include County, State, and federal government agencies, fuel suppliers, fleets, and industry and community organizations.

The primary activities of Honolulu Clean Cities include alternative fuel vehicle displays at public events; ride-and-drive events for fleet managers, the media, and

decision-makers; development of an alternative fuels activity book for children; publication and distribution of an alternative fuels newsletter for fleet managers and decision-makers; development of programs to convert vehicles and to share information among participants' own fleets; development of joint fueling arrangements; and training.